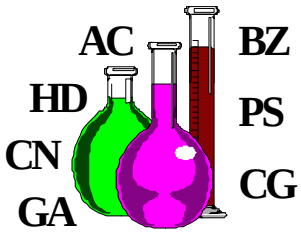
U.S. Army Center for Health Promotion and Preventive Medicine



General Facts About Sulfur Mustard Agents H and HD

218-32-1096

General

H and HD are blister and alkylating agents, producing cytotoxic action on the hematopoietic (blood-forming) tissues. The rate of detoxification of H and HD in the body is very slow, and repeated exposures produce a cumulative effect. Its toxic hazard is high for inhalation, ingestion, and skin and eye absorption, but the most common acute hazard is from liquid contact with eyes or skin.

Synonyms

Sulfide, bis (2-chloroethyl);
Bis(beta-chloroetyhyl) sulfide;
Bis(2-chloroethyl) sulfide;
1-chloro-2(beta-chloroethylthio)ethane;
beta, beta'-dichlorodiethyl sulfide;
Di-2-chloroethyl sulfide;
beta, beta'-dichloroethyl sulfide;
2, 2'-dichloroethyl sulfide;
Sulfur mustard;
Iprit;
Kampstoff “Lost”;
Mustard Gas;
Senfgas;
S-yperite;
Yellow Cross Liquid;
Yperite.

Description

Mustard agent *liquid* is colorless when pure, but it is normally a yellow to brown oily substance. Mustard agent *vapor* is colorless with a slight garlic- or mustard-like odor.

Overexposure Effects

HD is a vesicant (blister agent) and alkylating agent producing cytotoxic action on the hematopoietic (blood forming) tissues, which are especially sensitive. The rate of detoxification of HD

Agent H - The chemical Levinstein mustard; mixture of 70% bis(2-chloroethyl) sulfide and 30% sulfur impurities produced by unstable Levinstein process.

Agent HD - The chemical Distilled mustard or bis(2-chloroethyl) sulfide; HD is H that has been purified by washing and vacuum distillation to reduce sulfur impurities, Chemical Abstract Service Registry No. 505-60-2.

in the body is very slow, and repeated exposures produce a cumulative effect. The physiological action of HD may be classified as local and systemic. The local action results in conjunctivitis or inflammation of the eyes, erythema which may be followed by blistering or ulceration; inflammation of the nose, throat, trachea, bronchi, and lung tissue. Injuries produced by HD heal much more slowly and are more susceptible to infection than burns of similar intensity produced by physical means or by most other chemicals. Systemic effects of mustard may include malaise, vomiting, and fever, with onset time about the same as that of the skin erythema. With amounts approaching the lethal dose, injury to bone marrow, lymph nodes, and spleen may result. HD has been determined to be a human carcinogen by the International Agency for Research on Cancer.

Emergency and First Aid Procedures

Inhalation: remove victim from the source immediately; administer artificial respiration if breathing has stopped; administer oxygen if breathing is difficult; seek medical attention immediately.

Eye Contact: speed in decontaminating the eyes is absolutely essential; remove person from the liquid source, flush the eyes immediately with water by tilting the head to the side, pulling the eyelids apart with the fingers, and pouring water slowly into the eyes; do not cover eyes with bandages; but if necessary, protect eyes by means of dark or opaque goggles; seek medical attention immediately.

Skin Contact: don respiratory protective masks and gloves; remove victim from agent source immediately; flush skin and clothes with 5 percent solution of sodium hypochlorite or liquid household bleach within 1 minute; cut and remove contaminated clothing; flush contaminated skin area again with 5 percent sodium hypochlorite solution; then wash contaminated skin area with soap and water; seek medical attention immediately.

Ingestion: do not induce vomiting; give victim milk to drink; seek medical attention immediately.

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